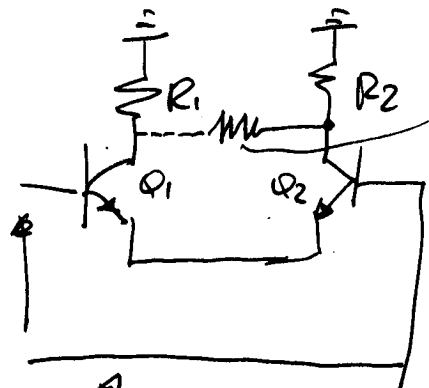


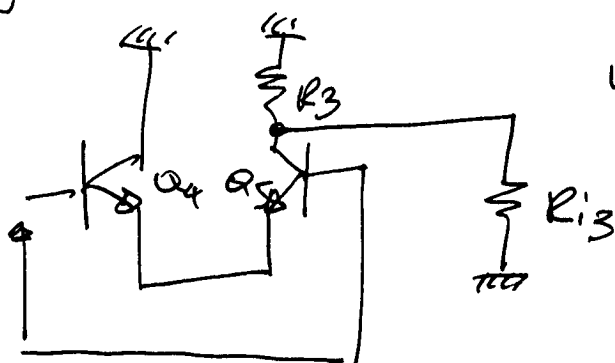


r_{i2} = impedenza di
ingresso 2° stadio
differenziale

schema
equivalente
1° stadio

$$A_1 = \frac{[R_{i2} \parallel (R_1 + R_2)]}{V_{e1} + V_{e2}} = \frac{[5k \parallel 40k]}{200\Omega} = 23.4$$

guadagno 2° stadio : schema equivalente



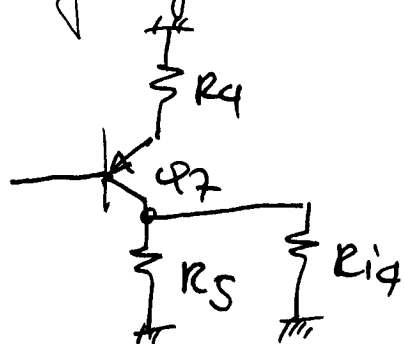
uscita single-ended

R_{i3} = resistenza di
ingresso di Q_7

$$\begin{aligned} &= h_{fe} (R_4 + V_{e7}) \\ &= 100 \cdot (23k + 25\Omega) \\ &= 234.8k\Omega \end{aligned}$$

$$A_2 = \frac{(R_3 \parallel R_{i3})}{r_{e4} + r_{e5}} = \frac{3k\Omega \parallel 234.8k\Omega}{50\Omega} \approx 60$$

guadagno 3° stadio : schema equivalente



$$R_{i4} = h_{fe} \cdot \left(\frac{V_{e8} + R_6}{1} \right) = 100 \left(\frac{25\Omega}{5} + 3k \right) = 303.5k$$